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# Pharmaceutical properties of paclitaxel and their effects on preparation and administration.

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Paclitaxel is a mainstay in the treatment of ovarian and breast cancers, and its use in other malignancies is being explored. Although it has great clinical utility, the drug and its formulation components pose a number of challenges to pharmacists and nurses. Paclitaxel is insoluble in water and is formulated in an equal parts mixture of ethanol and Cremophor EL, which disperses the drug in an aqueous medium. At concentrations of 0.3-1.2 mg/ml, paclitaxel is stable for at least 2 days. Additional research identified precipitation as the major limitation to long-term stability and supports the use of an inline filter for all infusions. The formulation vehicle also leaches the plasticizer DEHP from polyvinyl (PVC)-containing solution bags and administration sets. This effect is dependent on the concentration of surfactant, the amount of accessible DEHP, and many other factors. Health care practitioners must educate themselves regarding appropriate non-PVC containers and administration sets for safe and convenient delivery of paclitaxel. The compatibility of this and other drugs in solution is under investigation; currently, amphotericin B, chlorpromazine, hydroxyzine, methylprednisolone sodium succinate, and mitoxantrone have been determined to be physically incompatible with paclitaxel infusions.

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Related Articles, Links

# Compatibility and stability of aplidine, a novel marine-derived depsipeptide antitumor agent, in infusion devices, and its hemolytic and precipitation potential upon i.v. administration.

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Aplidine is a novel marine-derived antitumor agent isolated from the Mediterranean tunicate Aplidium albicans. The compound is pharmaceutically formulated as a lyophilized product containing 500 microg active substance per dosage unit. Prior to i.v. administration it is reconstituted with a solution composed of Cremophor EL, ethanol absolute and Water for Injection (15/15/70% v/v/v) with further dilution in 0.9% w/v sodium chloride for infusion (normal saline). The aim of this study was to investigate the compatibility of aplidine infusion solutions with polyvinyl chloride (PVC)-containing and PVC-free administration sets, and to determine the stability of aplidine after reconstitution and further dilution in infusion solutions. Furthermore, in vitro biocompatibility studies to estimate the hemolytic and precipitation potential of aplidine infusion solutions upon i.v. administration were conducted. In this study we show that sorption of aplidine to PVC and to a lesser extent to PVC-free administration set materials occurs. Also, most probably due to the presence of Cremophor EL in the infusion solution, significant leaching of diethylhexyl phtalate (DEHP) from the PVC administration set occurs. After reconstitution and dilution the drug is stable for at least 24 and 48 h, respectively, in glass containers when stored at room temperature (20-25 degrees C) and ambient light conditions. We found that aplidine should be administered in infusion concentrations equal or above 28.8 microg/ml using a PVC-free administration set consisting of a glass container and PVC-free infusion tubing. After reconstitution it must be diluted further with normal saline within 24 h after preparation and subsequently administered to the patient within 48 h. Additionally, results from the biocompatibility studies show that neither hemolysis nor precipitation of aplidine is expected upon i.v. administration.

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